

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

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Paper No. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte HYE-JEONG NAM

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Appeal No. 1999-0043  
Application 08/599,875<sup>1</sup>

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HEARD: May 10, 2001

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Before KRASS, BARRETT, and BLANKENSHIP, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

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<sup>1</sup> Application for patent filed February 12, 1996, entitled "Disk Drive Recording Apparatus Having Actuator Arm With Dual Heads And Head Switching Control Method," which claims the foreign filing priority benefit under 35 U.S.C. § 119 of Republic of Korea Application 11444, filed May 10, 1995.

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#### DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-13.

We reverse.

#### BACKGROUND

The invention relates to a disk drive recording apparatus and method for improving the seek time by utilizing two magnetic heads on a single side of the disk. The disk recording medium is divided into three equally spaced intervals and the heads are spaced apart by a distance equal to one of the intervals as shown in figure 3. In the center interval, between  $N/3$  and  $2N/3$ , either head can read/write data. According to the invention, in the center interval the head closest the target track is selected to read/write data.

Claim 1 is reproduced below.

1. A disk drive recording apparatus, comprising:  
an actuator arm;

first and second heads extending from said actuator arm for writing and reading data to and from a first surface of a disk recording medium, said first and second heads being spaced apart from each other in a circumferential direction along a single radius of said first surface of said disk recording medium;

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switching means for switching a data input/output path between said first head and said second head in response to a control signal; and

control means for identifying a target position on said first surface of said disk recording medium, determining which one of said first and second heads is closer to said target position, generating said control signal to switch said data input/output path to said first head when said first head is closer to said target position and generating said control signal to switch said data input/output path to said second head when said second head is closer to said target position.

THE PRIOR ART

The Examiner relies on the following prior art:

1954	Daniels et al. (Daniels)	2,680,239	June 1,
1991	Mizunoe et al. (Mizunoe)	4,998,238	March 5,
1994	Gilovich	5,343,347	August 30,
1996	Kitahara	5,519,676	May 21,

(effective filing date October 11, 1994)

Daniels discloses an apparatus for rapidly selecting a desired area or point among a group of such areas or points positioned in a track. The disk embodiment has a clock pulse track 13 read by a transducer 16, positional data track 14 read by transducer 17, and intelligence track(s) 15 having 10 transducers 18, 18', 18", etc., which "may be interpreted [sic] as indicating either one or more heads, depending on the number of tracks involved" (col. 3, lines 69-71). When it is desired to locate certain areas, positional data is read from track 14 and the difference in position is determined. "With the difference thus determined, the transducing unit in closest anticipatory proximity to the area to be selected is enabled for transducing while the other transducing units remain unenabled." Col. 1, lines 40-44. Thus, Daniels

teaches the general concept of switching to a head which is closer to the target position, albeit in connection with fixed heads that are positioned at the same radial distance from the center of the disk.

Gilovich, which is disclosed as prior art by Appellant (specification, p. 2), discloses in figure 5 a disk drive recording apparatus having a bifurcated actuator arm supporting a pair of spaced transducing heads. Both heads track over a single continuous path P between the outer track T1 and the inner track T2, and each head covers one-half the path thereby reducing the data access time because the maximum rotational movement of the actuator arms is reduced by one-half (col. 9, lines 29-47).

#### THE REJECTIONS

Claims 1, 4, and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Daniels and Gilovich. The Examiner concludes that it would have been obvious "to modify the teachings of Daniels et al[.] to include the teachings of Gilovich, motivation being to reduce the size of the package as set forth in col. 3, lines 50-54 of Gilovich" (Examiner's Answer, p. 4), that is, "the fixed heads of Daniels et al[.]

are substituted with the movable heads of Gilovich"  
(Examiner's Answer, p. 6). The Examiner finds, as to the  
three regions recited in claims 4 and 8, that Daniels teaches  
switching in three regions and finds that "[i]t is inherent  
when the references are combined to space the regions in a  
circumferential direction along a single radius because the  
heads of Gilovich are spaced this way" (Examiner's Answer, p.  
4).

Claims 2, 5-7, and 9-13 stand rejected under 35 U.S.C.  
§ 103(a) as being unpatentable over Daniels and Gilovich, as  
applied to claims 1, 4, and 8, further in view of Mizunoe.

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being  
unpatentable over Daniels and Gilovich, further in view of  
Mizunoe and Kitahara.<sup>2</sup>

We refer to the final rejection (Paper No. 10) and the  
examiner's answer (Paper No. 16) for a statement of the

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<sup>2</sup> The Examiner rejects claim 3 under § 103(a) "as being  
unpatentable over Daniels et al[.] in view of Gilovich as  
applied to claim 2 above, and further in view of Mizunoe et  
al[.] and Kitahara" (final rejection, p. 4; examiner's answer,  
p. 6). However, claim 3 does not depend on claim 2 and, thus,  
the reference to the rejection of claim 2 is inappropriate.  
Further, claim 2 is rejected over Daniels, Gilovich, and  
Mizunoe, not Daniels and Gilovich as stated.

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Examiner's position, and to the appeal brief (Paper No. 15) (pages referred to as "Br\_\_") and the reply brief (Paper No. 17) (pages referred to as "RBr\_\_") for a statement of Appellant's arguments thereagainst.

#### OPINION

Appellant argues that it would not have been obvious to substitute the multiple movable heads of Gilovich disposed on an actuator assembly and movable in a direction transverse to the circumference of the recording medium disk for the fixed heads of Daniels in which the heads are disposed around a single track of fixed radius (Br7-8). It is argued that it would actually increase the package size to replace the fixed heads of Daniels with the movable heads and actuator assembly of Gilovich (Br7; RBr2). It is argued that the resultant combination does not teach or suggest the feature of claim 1 that the control means switches to that head which is closer to the target position (Br9). It is argued that Daniels does not suggest switching between two heads in three regions as recited in claims 4 and 8 (RBr3) and that it would not be inherent to space the regions in a circumferential direction as stated by the Examiner (RBr3-4).

We do not see how Daniels and Gilovich are proposed to be combined to produce the claimed invention. Daniels shows multiple heads 18, 18', 18", etc. spaced equally around a single data track. Daniels indicates that each head may be more than one head, depending on the number of tracks involved; thus, at each angular head location, there would be a number of heads located along the radius, one for each track. It is logical that the fixed heads lying along a radius, one per track, could be replaced by a single head affixed to an actuator that would read all tracks or an actuator with two heads each reading half the tracks, as taught by Gilovich (although this does not seem to be the Examiner's rationale). This would still require 10 actuators, one for each angular location. Daniels teaches the general concept of switching to a head which is closer to the target position along a circumferential direction. If the fixed heads in Daniels were replaced with the movable heads of Gilovich, this would still result in selecting one of 10 movable heads circumferentially spaced around the disk as the closest head. Daniels does not teach or suggest modifying the read/write control of Gilovich so as to switch the data



input/output path to the head closer to the target position in a radial direction. Since each head in Gilovich reads one-half the tracks, the control only switches to the head that can service that track. The only way it is meaningful to say there is switching to a head that is closer to a target position is if there are some positions which can be read by either head, which is not the case in Gilovich. The Examiner has failed to establish a prima facie case of obviousness. The rejection of claims 1, 4, and 8 is reversed.

The references to Mizunoe and Kitahara do not cure the deficiencies of Daniels and Gilovich with respect to the rejection of parent claims 1, 4, and 8. Moreover, we find that Mizunoe does not disclose three regions or spacing the heads by a distance corresponding to one of the three regions as recited in the dependent claims and that such spacing would not be inherent as stated by the Examiner. We further find that Kitahara does not disclose dividing the recording medium into three equally spaced intervals in a circumferential direction along a single radius. For these reasons, the rejections of claims 2, 3, 5-7, and 9-13 are reversed.

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CONCLUSION

The rejections of claims 1-13 are reversed.

REVERSED

ERROL A. KRASS	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
LEE E. BARRETT	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
	)	
HOWARD B. BLANKENSHIP	)	
Administrative Patent Judge	)	

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